1. Moeen asked Ali, "Could you lend me a hundred rupees until tomorrow?"

   (a) Moeen asked Ali whether he could lend him a hundred rupees until tomorrow.

   (b) Moeen asked Ali whether he could lend him a hundred rupees until the next day.

   (c) Moeen asked Ali whether he could lend me a hundred rupees until the next day.

   (d) Moeen asked Ali whether he could lend a hundred rupees until the next day.

2. For the function

   $f(x,y)z = x\,y\sin(\quad)yz$

   $\frac{d}{dx}(1.1,\frac{\pi}{2}) =$ _____

   (a) $\frac{\pi}{2}$ (b) $3\frac{\pi}{2}$ (c) π (d) 1

3. For a continuous function $f(x)$ on [a, b] the approximate root lies in the interval [c, b]if

   (a) $f(x)$ has opposite signs at x = a x = b

   (b) $f(x)$ has opposite signs at x = a x = c

   (c) $f(x)$ has opposite signs at x = a x = b

   (d) $f(x)$ has opposite signs at x = c x = b

4. For $y = x^2 + c$ the equation of orthogonal trajectory is

   (a) $2y = \ln\left(\frac{c}{\sqrt{x}}\right)$ (b) $y = \ln\left(c\sqrt{x}\right)$

   (c) $y = \ln\sqrt{x} + c$ (d) $y = \ln\left(\frac{\sqrt{x}}{c}\right)$

5. Choose the wrong statement.

   (a) Operating life for fuel cell is unlimited

   (b) Electrode in fuel cell may be porons solid and may contain catalyst

   (c) The fuel in fuel cell can be gas, liquid, solid or solution

   (d) In fuel cell the cell products cannot be regenerated

6. Which element has the highest 2nd ionization energy?

   (a) Sr (b) Li (c) Mg (d) Ca

7. The equilibrium constant for the Protolysis of ammonium ion, $\left(NH_4^+ + H_2O \rightleftharpoons NH_3 + H_3O^+\right)$ is 5.6×10^{-10} at $15^\circ C$. The pH of 1.0 M NH_4Cl solution is closet to which of the following.

   (a) 9 (b) 7 (c) 5 (d)3

8. Which condition must apply for the work done by an expanding gas to be $P\Delta V$, where p is the pressure of the gas and ΔV is its change in volume?

   (a) No thermal energy must be supplied to the gas.

   (b) The expansion must be at a constant rate.

   (c) The pressure must be constant.

   (d) The temperature of the gas must be constant.

9. Domain of $\vec{F}(t) = 2t\vec{j} - 3t\vec{j} + t^{-1}\vec{k}$ is

   (a) Set of all values of t

   (b) For all t except $t \neq 0$

   (c) For all t except $t = 0$

   (d) Set of al real numbers

10. Which of the following is an ionic oxide?

    (a) Mn_2O_7 (b) ZnO (c) CO (d) H_2O_2

11. A solution 0.1 M in H_2CO_3 and 0.1 M in $NaHCO_3$ is made. The pH of the resulting solution should be closest to

    Note: H_2CO_3 Pka = 6.37

    (a) 6.37 (b) 4.35 (c) 6.28 (d) 7.37

12. Most solution s containing ferric ions are usually yellow or yellowish brown, this is due to the formation of

    (a) $\left[Fe(H_2O)_6\right]^{3+}$ (b) $\left[Fe(H_2O)_5OH\right]^{3+}$

    (c) $\left[Fe(H_2O)_4(OH)_2\right]^{+}$ (d) $\left[Fe(H_2O)_3(OH)_3\right]^{0}$

13. A student kept her 60Watt and 120volt study lamp turned on from 2:00PM until 2:00 AM. How many coulombs of charge went through it?

    (a) 3600 (b) 7200 (c) 18000 (d) 21600

14. Solenoid B has the twice radius and six time the number of turns per unit length as solenoid A. The ratio of the magnetic field in the interior of B to that in the interior of A is:

    (a) 2 (b) 4 (c) 6 (d) 1

15. As a loop of wire with a resistance of $10\,\Omega$ moves in a constant non uniform magnetic field. It loses K.E at a uniform rate of 4.0 mJ/Sec the induced current in the

loop is :

(a) 0 (b) 2mA (c) 2.8mA (d) 20mA

16. Which of the following is not an adjective?

(a) Bravery (b) Intelligent

(c) Beautiful (d) Honest

17. $\frac{d}{dx}(\ln|x) = \frac{1}{x}$ rhdw$\int$ $x\,dx =$

(a) $\frac{1}{x}$ (b) $x \ln x$

(c) $x \ln x - 1$ (d) $x \ln x - x$

18. Planets travel in _____ paths

(a) Circular (b) Parabolic

(c) Elliptical (d) Hyperbolic

19. Equation of the tangent to the circle $x^2 + y^2 = a^2$ at point (x_1, y_1) is given by

(a) $xx_1 - yy_1 = 0$ (b) $xx_1 + yy_1 = a^2$

(c) $xx_1 + yy_1 = a$ (d) $xy_1 + yx_1 = a^2$

20. If measure of the central of a minor arc is θ the measure of the angle subtended by the corresponding major arc is:

(a) 2θ (b) $\frac{\theta}{2}$ (c) $\frac{\theta^2}{2}$ (d) $\frac{\pi^2}{2}$

21. Which of the following is an acid?

(a) OH (b) PH_3 (c) HCO_3^- (d) SO_4^{2-}

22. Consider the following reaction

$PCl_{5(g)} \Leftrightarrow PCl_{3(g)} + Cl_{2(g)}$

When Kp at 500K is 0.85 . what will be the value of Kc at the same temperature

(a) $Kc = \frac{0.85}{0.82 \times 500}$ (b) $Kc = \frac{0.82}{0.85 \times 500}$

(c) $Kc = \frac{0.85 \times 500}{0.82}$ (d) $Kc = \frac{0.85}{0.82}$

23. What is the relative rates of diffusion of equal volume ($500\ cm^3$) of hydrogen and oxygen under same condition of temperature and pressure?

(a) 4:1 (b) 8:1 (c) 16:1 (d) 2:1

24. Monochromatic green light of wave length 5×10^{-7} illuminates a pair of slits 1mm apart the separation of bright lines on the interference pattern formed on a screen 2m away is

(a) 0.25m (b) 0.1mm (c) 1.0mm (d) 0.01m

25. There are two charges each of $5\mu c$ the ratio of the force acting on them will be

(a) 1:25 (b) 1:5 (c) 1:1 (d) 5:1

26. In the M.K.S system of units ϵ_0 equal

(a) $\frac{1c^2}{N - m^2}$ (b) $9 \times 10^{9}\ Nm^2\ C^2$

(c) $\frac{1}{4\pi \times 9 \pm 0^{9}} \left(\frac{c^2}{Nm^2}\right)$ (d) $\frac{1}{9 \times 10} \frac{c^2}{Nm^2}$

27. There is a current of 3.2 amp in a conductor. The number of electrons that cross any section normal to the direction of flow per second is:

(a) 2×10^{19} (b) 0.2×10^{19}

(c) 20×10^{19} (d) 200×10^{19}

28. The example of a non-ohmic resistance is

(a) Ge-resistance (b) Carbon resistance

(c) Copper wire (d) Diode

29. The feminine of MILKMAN is:

(a) Milkgirl (b) Milkmaid

(c) Milkwoman (d) Milklady

30. If an equation involve the derivative of dependent variable of one independent variable , is called

(a) Ordinary differential equation

(b) Partial differential equation

(c) Integral equation

(d) Partial integro-diffrential equation

31. $y = x + A$ is a solution of the D.E

(a) $dy + dx = 0$ (b) $\frac{dy}{dx} = 0$

(c) $\frac{dy}{dx} = 1$ (d) $\frac{dy}{dx} = C$

32. If slope of the family of curved $F(x, y, c_1)$ for the equation $x^2 + y^2 = C$ is $\left(-\frac{x}{y}\right)$ then slope of the orthogonal Trajectory of the second family $G(x, y, c_2)$ is

(a) $\frac{x}{y}$ (b) $-\frac{x}{y}$ (c) $\frac{y}{x}$ (d) $\frac{1}{x}$

33. Select the electronic configuration which can form easily -3 oxidation stat:

(a) $1S^2 2S^2 3P^2 SP$ (b) $1S^2 2S^2 3P^2 SP$

(c) $1s^2 2s^2 2p^3$

(d) $1s^2 2s^2 2p^3 3s^2 3p^6 3d^8 4p^3$

34. Steam of chlorine is passed over heated sulphur and form an orange colored foul smelling liquid having formula :

(a) SCl_2 (b) S_2Cl_2

(c) S_2Cl (d) Mixture of SCl_2 and S_2Cl_2

35. Select the one having half-filled P orbital's on losing an electron:

(a) Nitrogen (b) Lithium

(c) Oxygen (d) Fluorine

36. What is not conserved in nuclear processes?

(a) Charge (b) momentum

(c) The total number of neutrons

(d) The total number of nucleons

37. What behavior is the copper exhibiting?

(a) Brittle only (b) Elastic only

(c) Plastic only (d) Both (a) & (b)

38. The orbital velocity 'v' and the radius 'r' of the satellite are related by

(a) $v \propto r$ (b) $v \propto \frac{1}{r^2}$ (c) $v \propto \frac{1}{r}$ (d) $v \propto \frac{1}{\sqrt{r}}$

39. Katherine made her children _____ chores on Sunday

(a) make some (b) take some

(c) do some (d) does some

40. $\frac{1}{6!}+\frac{2}{7!}+\frac{3}{8!}=$

(a) $\frac{6}{8}$ (b) $\frac{6!}{8!}$ (c) $\frac{75}{8!}$ (d) $\frac{6}{2!}$

41. The objective function in a linear programming is usually denoted by

(a) $f(x,y)=ax$

(b) $f(x,y)=ax+by,\ a,b\in R$

(c) $f(x,y)\in ax+by$

(d) $f(x,y)=ax+by+c$

42. Non-negative constraints in a Linear problem is given by

(a) $x>0, y<0$ (b) $x\geq 0, y\geq 0$

(c) $x=0, y=0$ (d) $x\leq 0, y\leq 0$

43. Magnesium metal burn in air, the product form is

(a) MgO (b) Mg_3N_2

(c) $MgCO_3$ (d) Both (a) and (b)

44. Complexes exists in various coordination numbers, choose the coordination number which is less common:

(a) 2 (b) 4 (c) 5 (d) 6

45. Choose the mineral which is not of chromium

(a) Chrome irons stone (b) Chrome ochre

(c) Cordite (d) Chalcodite

46. The diode is used as:

(a) A modulator (b) An amplifier

(c) A rectifier (d) An oscillator

47. A photon of frequency f has a momentum associated with it if C is the velocity of light this momentum is:

(a) hf (b) $2hf$ (c) $\frac{hf}{c}$ (d) $\frac{hf}{c^2}$

48. The numerical ratio of displacement to distance is:

(a) Always less than one

(b) Always equal to one

(c) Always more than one

(d) Equal to or less than one

49. The synonym for the word "ANIMOSITY"IS:

(a) Powerful (b) Hatred

(c) Hatful (d) Quarrelsome

50. $\lim_{(x,y)\to(0,0)} f(x,y)=\frac{x^2}{x^2+y^2+2}$ is

(a) $\frac{1}{4}$ (b) $-\frac{1}{4}$ (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

51. Degree of the homogenous function $f(x,y)=\frac{\sqrt{x}+\sqrt{y}}{x+y}$ is

(a) 1 (b) Zero (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

52. Numerical method are used for solution of:

(a) Linear equation (b) Quadratic equation

(c) Cubic equation (d) Non-linear equation

53. Compounds of vanadium exists in the following oxidation states 5+, 4+, 3+, 2+ The compounds in the 3+ and 2+ oxidation states behave as

(a) Good oxidizing agent (b) Good reducing agent

(c) Weak oxidizing agent

54. Choose the correct name of the complex $K_2[PtCl_6]$

(a) Potassium hexa chloroplatinum (IV)

(b) Potassium hexa chloroplatinate (VI)

(c) Potassium hexa chloropalatinate (IV)

(d) Potassium chloro platinate

55. Choose the least stable of the following butenes:

(a) 1 –Butene (b) CiS - 2 - Butene

(c) Trans-2-butene (d) Iso butylene

56. Select the wrong statement about adsorption .

(a) The phenomenon of accumulation of molecules of a gas or liquid at the solid surface is called adsorption.

(b) The process of adsorption is selective in nature.

(c) Adsorption in general increases with increase in temperature.

(d) Adsorption on solid is reversible in nature

57. Select an incorrect statement about collides.

(a) Colloidal particles carry charges

(b) Addition of electrolytes coagulates the solution

(c) Every substance can be made to behave like lyphobic collides

(d) Every solid substance can be brought to colloidal state

58. Aproton is about 1840 times heavier than an electron .When it is accelerated by a potential difeerence of 1 KV, its kinetic energy will be:

(a) 1840 keV (b) $\frac{1}{1840}$ keV

(c) 1 keV (d) 920 keV

59. Charge is distribuited uniformily on the surfacde of large flat plate. The electrical field 2cm from the plate is 30 $\frac{N}{c}$. What is the electrical field at 4cm from the plate.

(a) 120 $\frac{N}{c}$ (b) 30 $\frac{N}{c}$ (c) 15 $\frac{N}{c}$ (d) 7.5 $\frac{N}{c}$

60. Two identical capacitor each with capacitance C, are connected in parallel and the combination is connected in series to a third identical caoacitor. The equivalent capacitance of this arrangement is

(a) $\frac{2c}{3}$ (b) c (c) 2c (d) 3c

61. Naila has two

(a) Sister-in-laws (b) Sisters-in-law

(c) Sister-in-law's (d) Sister's-in-law

62. Graph of the function y = sin x over the interval (0.2π) intersects the x – axis at

(a) One point (b) Two points

(c) Three points (d) Infinite points

63. Which of the following expresses periodic property

(a) $\sin(-\theta) = -\sin\ \theta$

(b) $\sin(\theta \pm 2\pi) = \sin\ \theta$

(c) $\sin(\theta - \pi) = -\sin\ \theta$

(d) $\sin(\pi - \theta) = \sin\ \theta$

64. The people ~~who are hardworking~~ always succeed. The underlined part of the sentence is

(a) Non defining clause (b) Phrase

(c) Defining clauses (d) Adjective clause

65. In the equation $4px = y^2$, if $p > 0$, then the parabola is symmetric with respect to

(a) Negative X-axis (b) Positive Y-axis

(c) Positive X-axis (d) X-axis

66. In the horizontal ellipse if foci are $F_1(h - c, k) and\ F_2(h+c,k)$, then its standard equation is give by

(a) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ (b) $\frac{(x-)(^2}{a^2} + \frac{)y-k^{\ 2}}{b^2} = 1$

(c) $\frac{(x-)(^2}{a^2} + \frac{)y-k^{\ 2}}{b^2} = 1$

(d) $\frac{(x-)c(^2}{a^2} + \frac{)y-k^{\ 2}}{b^2} = 1$

67. In translation of axis

(a) Direction of axes changing

(b) Origin is changing

(c) Both axes and srcin are changing

(d) Axes are changing through some angle

68. A sample containing copper weighing 10.0g yield 2.0g of copper sulphide. What is the percent of copper (amu Cu = 63.54) in the sample.

(a) $\frac{2.0\times100}{10.0}$ (b) $\frac{2.0\times2\times63.54\times100}{10\times95.60}$

(c) $\frac{2.0\times95.6}{10\times2\times43.54}$ (d) $\frac{2.0\times63.4\times100}{10\times95.60}$

69. Solubility of non-polar solute in non-polar solvent is because of:

(a) Their same molecular sizes

(b) Large difference in molecular sizes of solute and solvent

(c) Weak van der Waal's forces of solvent and solute particles

(d) Both (a) & (c)

70. An X-ray photon due to transition from M-shell to the vacancy in the k-shell is called:

(a) K α characteristic of X-ray

(b) K β characteristic of X-ray

(c) K γ characteristic of X-ray

(d) K characteristic of X-ray

71. Which of the following is correct?

(a) $Joule=\frac{coulomb}{volt}$ (b) $Joule = volt \times ampere$

(c) $Joule=\frac{volt}{ampere}$ (d) $Joule=coulomb\times volt$

72. A spring is stretched by 5 cm. Its potential energy is E. If it is stretched by 10 cm, is potential energy will be:

(a) 2E (b) 4E (c) 8E (d) 16E

73. Hussain suffer from no _____ about his capabilities

(a) Doubts (b) Hallucinations

(c) Illusion (d) Imaginations

74. If $f(x)=\begin{cases} +k(x+1)/x & \le 0 \\ k\left(1-x^2\right), if\ x>0 \\ 0, \quad if\ x=0 \end{cases}$ then if $f(2)=5, k=$

_____

(a) 0 (b) $\frac{5}{3}$ (c) $\frac{-5}{3}$ (d)5

75. A cone is 9 cm high and has a vertical angle of 60^0 then the diameter of its base is:

(a) $3\sqrt{3}$ (b) $6\sqrt{3}$ (c) $9\sqrt{3}$ (d) $18\sqrt{3}$

76. In any equilateral triangle the ration 1 : 2 : 3 holds for

(a) r_3: r : R (b) r : R : r_1

(c) r : r_1 : R (d) r_1 : R : r

77. Calculate E^0 cell from the half-cell reactions:

$Zn \rightarrow Zn^{+2} + 2e \quad E^{red}_{ox} = 0.76\ volt$

$Cu^{2+} + 2e \rightarrow Cu \quad E^{red} = +0.34$

(a) 1.10v (b) 1.20v (c) 1.0v (d) 1.40v

78. Alkali metals lime "Rb" & "Cs" catch fire in air and produce superoxide such as:

(a) Rab_2O & Cs_2O (b) RbO_2 & CsO_2

(c) RbO & CsO (d) RbO_2 & Cs_2O

79. Which of the following is amphoteric I nature;

(a) MgO (b) VeO (c) K_2O (d) CaO

80. Two springs of spring constant k_1 and k_2 are stretched by the same force. They are stretched by x_1 x_2 respectively, if $K_1 > K_2$ then:

(a) $x_1 = x_2$ (b) $x_1 > x_2$ (c) $x_1 < x_2$

(d) Depends on the length of the spring

81. Equation of a line parallel to Negative y - axis at a distance b units to the left of y – axis is given by:

(a) x = b (b) x = -b (c) y + b = 0 (d) y = -b

82. The point $p(x_1, y_1)$ lies above the line ax + by + c = 0. If

(a) $ax_1 + by_1 + c = 0, b = 0$

(b) $ax_1 + by_1 + c > 0, b < 0$

(c) $ax_1 + by_1 + c > 0, b > 0$

(d) $ax_1 + by_1 + c < 0, b > 0$

83. The following dynamics equilibrium exist between CrO_4^{2-} Ions in solution $CrO_4^{2-} \rightleftharpoons Cr_2O_7^{2-}$

(a) Equilibrium shifts to the right

(b) $Cr_2O_7^{2-}$ is decomposed to CrO_4^{2-}

(c) Equilibrium remains unaffected

(d) Equilibrium shifts to the left

84. Which of the following electronic configuration is/are correct?

i. $Cu_{29}[Ar]3d^{10}$

ii. $Ti_{22}[Ar]4s^2 3d^2$

iii. $Fe_{26}[Ar]4s^2 3d^5 4p^1$

(a) I only (b) I & ii only

(c) ii& iii only (d) I & iii only

85. Select completely immiscible pair of liquids:

(a) Phonol-water system

(b) Trimethylamine and water system

(c) Carbon disulphide and water system

(d) Ethanol and water system

86. If the 100g mass having 32ft/sec^2 then its force is

(a) 320 b (b) 9.8 N

(c) 320 dyne (d) none of the above

87. The uncertainty in position of an electron in a certain state is 5×10^{-10} m the uncertainty in its momentum might be

(a) 5.0×10^{-24} kg. m/s (b) 4.0×10^{-24} kg. m/s

(c) 3.0×10^{-24} kg. m/s (d) 1.5×10^{-24} kg. m/s

88. When a hydrogen atom makes the transition from the

second excited state to the ground state (at-13.6ev) the energy of the photon emitted is

(a) 1.5ev (b) 9.1ev (c) 12.1ev (d) 10.2ev

89. The plural of LOUSE is:

(a) Lices (b) Lice (c) Louses (d) Lyces

90. What is a proton?

(a) A hadron

(b) A particle consisting of two down quarks and one up quark

(c) A positive fundamental particle

(d) A positive lepton

91. What is correct for all transverse waves?

(a) They all involve the oscillation of atoms

(b) They can all be polarized

(c) They can all travel through a vacuum

(d) Both (a) & (b) are correct

92. I always _____ defy any authoritarianism.

(a) have and always will (b) have and will

(c) have defied and always will

(d) haven't but will

93. In factorial term n(n-1) (n-2) can be written as

(a) n! (b) $\frac{n!}{(n-3)!}$ (c) $\frac{(n-1)!}{(n-2)!}$ (d) (n-2)!

94. The common ratio of the geometric sequence $(a^n)= 2$ is given by

(a) 2 (b) $\frac{1}{2}-$ (c) $\frac{1}{2}$ (d) $-\frac{1}{2}$

95. $\sum_{j=2}^{10} \frac{1}{j} - \sum_{j=1}^{8} \frac{1}{j+2}$

(a) Zero (b) $\frac{9}{10}$ (c) $\frac{1}{2}$ (d) $\frac{1}{10}$

96. How many grams of $(NH_4)_2 SO_4 6H_2O$ be dissolved in 500cm^3 of distilled water to get 0.1 *M* solution? (*Molecular mass of Mohr's slat is 392*)

(a) 39.2g (b) 3.92g (c) 19.6g (d) 1.96g

97. According to transition state theory the reacting molecules form some kind of hypothetical structure that loses,

i. The structure

ii. The ability to rotate

iii. The ability to vibrate

Choose the correct option:

(a) i & ii (b) ii & iii (c) i & iii (d) i, ii & iii

98. Dimethyl glyoxime is used for the preparation of:

(a) Cu^{2+} ions (b) Co^{2+} (c) Ni^{2+} (d) Fe^{2+}

99. A sequence is a function whose domain is

(a) Real numbers (b) Natural numbers

(c) Integers (d) Positive

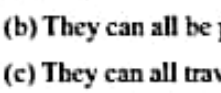
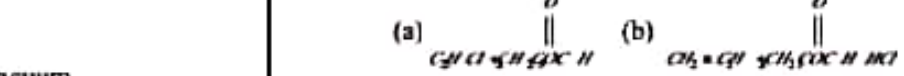
100. Choose the suitable catalyst for the following the reaction: $ROH+HCl \rightarrow RCl+H_2O$

(a) $AlCl_3$ (b) $ZnCl_2$ (c) $TiCl_4$ (d) $FeCl_3$

101. 50.0 cm^3 of a KOH solution is titrated to the phenolphthalein end point with 7.50 cm^3 of 1.0 M HCl. The concentration of KOH

(a) 7.5M (b) 0.75M (c) 0.15M (d) 1.5M

102. Diethyl ether react with Acetyl chloride in presence in presence of anhydrous $ZnCl_2$ to form:

(a)  (b) 

(c) $C_2H_5COOC_2H_5+Cl$

(d) none of the above

103. A fireman wants to slide down a rope. The breaking strength for the rope is $\frac{3}{4}$ of the weight of the man with what minimum acceleration should the fireman slide down

(a) $\frac{1}{2}$ g (b) $\frac{1}{4}$ g (c) $\frac{3}{4}$ g (d) Zero

104. A ball is projected upwards. Its acceleration at the highest point is:

(a) Zero (b) Directed upwards

(c) Directed downward

(d) Can't be predicted

105. A projectile is projected with a kinetic energy K. its range is R. it will have minimum kinetic energy after covering a horizontal distance equal to

(a) 0.25R (b) 0.5R (c) 0.75R (d) R

106. The emperor _____ his kingship and become a hermit.

(a) abolished (b) abated

(c) abdicated (d) abandoned

107. Choose the correct sentence:

(a) Brazil is a populous country; the beache's are warm sandy and spotless clean.

(b) Brazil is a populous country: the beaches are warm, sandy and spotlessly clean.

(c) Brazil is a populous country, the beaches are warm sandy and spotlessly clean

(d) Brazil is a populous; country the beaches are warm, sandy and spotlessly clean

108. By means of numerical procedure we obtain:

(a) Actual solution (b) Exact solution

(c) Approximate solution

(d) Specific solution

109. Newton Raphson's method is:

(a) Two points iterative

(b) One point iterative

(c) Many points iterative

(d) Infinite point iterative

110. By Trapezoidal Rule better approximate can be obtained if, The value of (Trapezoids n)

(a) Small (b) Large (c) Zero (d) Undefined

111. Molality of 10% w/w NaOH solution is

(a) 1.5m (b) 2.0m (c) 2.5m (d) 3.5m

112. If the force of attraction exists between the particles of dispersed phase and the dispersion medium terms the Sol is called:

(a) Lyophilic (b) Lyophobic

(c) Hydrophilic (d) Hydrophobic

113. The reaction between peroxodisulphate ions and iodide ions is given below:

$S_2O_8^{2-} + 2I^- \rightarrow 2SO_4^{2-} + I_2$

(a) Ni^{2+} (b) Fe^{2+} & Fe^{3+}

(c) Fe^{3+} (d) Fe^{2+}

114. A man of mass 60 kg climbs up a 20 m long staircase to the top of a building 10 m high. What is the work done by him: Take g = 10 ms^{-2}

(a) 12 KJ (b) 6 KJ (c) 3 KJ

(d) None the above

115. When a force retards the motion of a body the work done is:

(a) Zero (b) Negative

(c) Positive (d) +ve or –ve depending upon the magnitude of force and displacement

116. $CH_3 - \overset{O}{\overset{\|}{C}} - OONO_2$ is the formula of:

(a) PAN (b) Smog

(c) Ozone (d) Chlorofluro carbons

117. Two copper wires S and T of equal length are connected in parallel. A potential difference is applied across the ends of this parallel arrangement. Wire S has a diameter of 3.0 mm. Wire T has a diameter of 1.5 mm. What is the value of the ratio $\frac{\text{current in T}}{\text{current in S}}$?

(a) $\frac{1}{4}$ (b) $\frac{1}{2}$ (c) 2 (d) 4

118. A pedal bicycle is fitted with an electric motor. The rider switches on the motor for a time of 3.0 minutes. A constant current of 3.5 in the electric motor is provided from a battery with a terminal voltage of 24 V. What is the energy supplied by the battery?

(a) 84J (b) 250J (c) 630J (d) 15000J

119. A sound wave has a speed of 330 m/s and a frequency of 50 Hz. What is a possible distance between two points on the wave that have a phase difference of 60° ?

(a) 0.03m (b) 1.1m (c) 2.2m (d) 6.6m

120. People claim to have seen the suspect in several cities.

(a) The suspect was claimed to be seen by the people in several cities.

(b) The suspect is claimed to have been seen in several cities.

(c) The suspect has claimed to be seen by the people in several cities.

(d) The suspect is being claimed to be seen in several cities by the people.

121. The asymptotes of the hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$ is given by

(a) $y = \pm \frac{b}{a}x$ (b) $y = \pm \frac{a}{b}x$

(c) $y = \pm \frac{c}{a}x$ (d) $y = \pm \frac{a}{c}x$

122. $adx + by\sin x\,dx = 0$ is

(a) Linear differential equation

(b) Homogeneous differential equation

(c) Separable differential equation

(d) Non Separable differential equation

123. $\frac{k!}{(k+1)!} =$ _____

(a) (k+1) (b) K (c) $\frac{1}{k}$ (d) $\frac{1}{k+1}$

124. If A and B are disjoint events, then P (A U (B) =

(a) P (A) + P (B) (b) P(A)+P(B)–P(A)∩(B)

(c) P (A) U P (B) (d) $\frac{n(A \cup B)}{n(S)}$

125. $\binom{n}{n-r} =$ _____

(a) $\binom{n}{r}$ (b) $\binom{n+1}{r}$ (c) $\binom{n-1}{r}$ (d) $\binom{n}{n-1}$

126. Adipic acid react with dimethylter thalate to form condensation polymer:

(a) Nylon-6,8 (b) Dacron

(c) Teflon (d) Bylon-6,6

127. $R-COONa \quad NaOH \xrightarrow[\Delta]{CaO} RH \quad Na_2CO_3$

The above relation is known as:

(a) Carboxylation (b) Decarbxylation

(c) Neutralization (d) Reduction

128. 1,3-Dihydroxybenzene is also known as:

(a) Catchol (b) Resorcinol

(c) Hydroqunire (d) Cresol

129. Two bodies of mass m and 4 m are moving with equal kinetic energies. The ratio of their linear momentum will be:

(a) 1:4 (b) 4:1 (c) 1:2 (d) 2:1

130. The kinetic energy of a body of mass 1 kg and momentum 2Ns is equal to:

(a) 1J (b) 10J (c) 5J (d) 2J

131. A man of mass 90 kg is standing in an elevator whose cable broke suddenly , if the elevator falls freely , the force exerted by the floor on the man is :

(a) Zero (b) $90\times9.8N$ (c) 90 N (d) -90 N

132. Silver accylide in dry condition is highly explosive, it reacts with nitric acid to form:

(a) Sliver oxide, carbon dioxide and water

(b) Silver nitrate and ethyne

(c) Silver nitrate ethane

(d) Silver nitrate and carbon dioxide

133. Food article spoiling involves oxidation reduction processes, to prevent this reaction we usually add preservative which act as:

(a) An oxidizing agent (b) A reducing agent

(c) An acid(d) A base

134. The vector P makes 120^0 with x-axis and the vector Q makes 30^0 with y-axis, their resultant is:

(a) $\vec{P}\vec{Q}$ (b) $\vec{P}-Q$

(c) $\sqrt{P^2+Q^2}$ (d) $\sqrt{P^2-Q^2}$

135. A car travels a distance s on a straight road in 2 hours and then returns to the starting point in the next 3hour. Its average velocity is:

(a) $\frac{S}{5}$ (b) $\frac{2S}{5}$ (c) $\frac{S}{2}+\frac{S}{3}$ (d) zero

136. When we kick a stone, we get hurt it happens due to:

(a) Inertia (b) Velocity

(c) Reaction (d) Momentum

137. The antonym for the word "ACQUIT" is:

(a) Retreat (b) Convict

(c) Conceal (d) Deprive

138. For two vector $\vec{a}$ and $\vec{b}$ it holds that $\vec{a}\vec{b}=|\vec{a}|\ |\vec{b}|\cos\theta$ then it holds $|\vec{a}|=\sqrt{a.a}$ for $\vec{a}=b$ if and only if

(a) When $\vec{a}$ and $\vec{b}$ are parallel

(b) When $\vec{a}$ and $\vec{b}$ are perpendicular

(c) When $\vec{a}$ and $\vec{b}$ are in the opposite direction

(d) When $\vec{a}$ and $\vec{b}$ are parallel but opposite direction

139. The 3rd term of the expression $\frac{n^2-2}{n}$ is

(a) $\frac{7}{3}$ (b) $\frac{7}{3}$(c)3 (d)1

140. The angular momentum of a wheel change from 2L to 5Lin 3 seconds. The magnitude of the torque acting on it is:

(a) $\frac{L}{5}$ (b) $\frac{L}{3}$ (c) $\frac{L}{2}$ (d) L

141. If a sphere is rolling, the ratio of its rotational energy to total energy is given by :

(a) 7:10 (b) 2:5 (c)10:7 (d) 2:7

142. The angular velocity of a second hand in watch is :

(a) $\frac{\pi}{30}$ (b) 2π (c) π (d) $\frac{60}{\pi}$

143. She said "I passed the examination long ago "

(a) She said that she had passed the examination long ago

(b) She said that she had passed the examination long before.

(c) She told she had passed the examination long before

(d) She asked that she had passed the examination long ago (b) (c) (d)

144. $if\ y=\cos ec^{-1}(e^{-x})\ then\ \frac{dy}{dx}=$

(a) $\frac{e^{-x}}{\sqrt{e^{-2x}-1}}$ (b) $\frac{-e^{-x}}{\sqrt{e^{-2x}-1}}$

(c) $\frac{+1}{\sqrt{e^{-2x}-1}}$ (d) $\frac{-1}{\sqrt{e^{-2x}-1}}$

145. Let $f(x)$ be a differentiable function on (a, b) if then if $f(x)$ is strictly decreasing on (a, b) if

(a) $f'(x)>0\ for a<x<b$ (b) $f'(x)<0\ for a<x<b$

(c) $f'(x)=0\ for a<x<b$ (d) $f'(x)\le0\ for a<x<b$

146. If $f(x)$ has a critical value at x = c i.e $f'(c)=0$ and $f''(x)=0$ exists on (a, b) containing C then $f'(c)=0$ provided that

(a) Function has maximum value at x = c

(b) Function has a minimum value at x = c

(c) Function has no minimum value or minimum at x = c

(d) Function is undefined at x = c

147. Silver mirror is given by :

(a) Aldehyde (b) Ketone (c) Ethers

148. The carbonyl group of carboxylic acid do not exhibit the characteristics reaction of aldehyde and ketone due to :

(a) The C of carboxyl is less positive

(b) The C of carboxyl is more positive

(c) The C of Ketone is less positive

(d) Does not depend on C atom

149. $Z = f(x,y) = \frac{x^3 e^{y/x}}{y} - 3\frac{y}{x}\sqrt{x^2y^2}$ is homogeneous of degree

(a) 0 (b) 1 (c) 2 (d) 3

150. Blue baby syndrome is caused due to:

(a) A phosphate in diets

(b) Chlorates in diets

(c) Excessive nitrate in diets

(d) Deficiency of nitrate

151. Select the IUPAC name of the following compound.

$CH_3OCH_2CH_3$

(a) Methoxy ethane

(b) Ethyl metyl ether

(c) Methyl ethyl ether

(d) Ethoxy methane

152. Which polyatomic anion is unstable?

(a) $B_4O_7^{2-}$ (b) $Cr_2O_7^{2-}$ (c) $S_4O_6^{2-}$ (d) CrO_4^{2-}

153. Which statement is not valid?

(a) Current is the speed of the charged particles that carry it.

(b) Electromotive force *(e.m.f)* is the energy converted to electrical energy from other forms per unit charge.

(c) The potential difference *(p.d)* between two points is the work done per unit charge when moving charge from one point to another.

(d) The resistance between two points is the *(p.d.)* between the two points per unit current.

154. Which pair contains one vector and one scalar quantity?

(a) Displacement acceleration

(b) Force kinetic energy

(c) Momentum velocity

(d) Power speed

155. A man standing next to a stationary train hears sound of frequency 400 Hz emitted from the train's horn. The train then moves directly away from the man and sounds its horn when it has a speed of 50 m s^{-1}. The speed of sound is 340 m s^{-1}. What is the difference in frequency of the sound heard by the man on the two occasions?

(a) 51Hz (b) 69Hz (c) 349Hz (d) 469Hz

156. Nylon (6,6) six carbon atom in each monomer is the example of:

(a) Addition polymers

(b) Substitution polymers

(c) Condensation polymers

(d) Condensation monomers

157. Angular momentum has the same unit as:

(a) Impulse x distance

(b) Linear momentum x time

(c) Work x frequency

(d) Power x time

158. Two particle having mass M and m are moving in a circular path having radius R and r. if their time period are same , then the ratio of their angular velocity will be:

(a) $\frac{r}{R}$ (b) $\frac{R}{r}$ (c) 1 (d) $\sqrt{\frac{R}{r}}$

159. Which equation represents β + decay?

(a) Neutron→ proton +positron +antineutrino

(b) Neutron → proton + positron + neutrino

(c) Proton → proton + neutron+ antineutrino

(d) Proton + neutron+ positron + neutrino

160. To have an old head on young shoulders' means:

(a) To be wiser than one's age

(b) To be young but appear old

(c) To have low IQ

(d) To be old but appear young

161. The equation of directrix for the parabola $y^2 = -4px$ is

(a) $y=-p$ (b) $y = p$

(c) $x=-p$ (d) $x = p$

162. The angle of the tangent line $x - y = 0$ to a curve $y = f(x)$ is

(a) 30° (b) 45° (c) 60° (d) 0

163. The line $2x - y + c = 0$ will touch the ellipse $\frac{x^2}{3} + \frac{y^2}{4} = 1$ if c = _____

(a) ±4 (b) ±7 (c) ±9 (d) ±11

164. Polyester resin-polyurethane resin is:

(a) Hot adhesive (b) Multipart adhesive

(c) One art adhesive (d) Contact adhesive

165. What is the colour of oxidizing smog:

(a) Reddish brownish gray

(b) Bluish brownish gray

(c) Brownish gray (d) Yellow

166. Carboxylic acid react with ammonia to form ammonium salts which on heating produces:

(a) Co_2 (b) Alkane (c) Ester (d) Acetamide

167. For a body moving with constant speed in a horizontal circle, which of the following remains constant:

(a) Velocity (b) Centripetal force

(c) Acceleration (d) Kinetic energy

168. If a gymnast sitting on a rotating stool with his arms outstretched suddenly lowers his hands:

(a) The angular velocity decreases

(b) His moment of velocity decreases

(c) The angular velocity stays constant

(d) The angular momentum increase

169. The unit of gravitational potential is

(a) Joule (b) Joule / kilogram

(c) Joule kilogram (d) Kilogram

170. Do not disturb him for nothing.

(a) Let not he be disturbed for nothing

(b) He is not to be disturbed for nothing

(c) Nobody should disturb him for nothing

(d) We should not disturb him for nothing

171. Let $\vec{G}(t) = \vec{ti} - (t+1)^{+2}\vec{j} + t^{-1}\vec{k}$ the Domain of the vector function $\vec{G}(t)$ is

(a) All value of t

(b) Only non-negative value of t

(c) All positive values of t

(d) All values except t = 0

172. The order of steepness of lines $L_1: y - x + 3 = 0, L_2: y - \frac{1}{3}x - 5, L_3: y - 0.3x + 6$ is

(a) L_1, L_2, L_3 (b) L_2, L_3, L_1

(c) L_3, L_2, L_1 (d) L_1, L_3, L_2

173. The point A (4.5) is above the line:

(a) $3x - 7y - 15 = 0$

(b) $3x - 7y + 15 = 0$

(c) $3x + 7y - 15 = 0$

(d) $3x + 7y + 15 = 0$

174. Solvent dyes are also known as:

(a) Spirit - soluble dyes

(b) Ether – soluble dyes

(c) Direct dyes (d) Basic dyes

175. Light naphtha contain hexane & heptane is obtained in the boiling range of

(a) 60 - 100°C (b) 80 - 100 °C

(c) 40 - 60°C (d) 60 - 80 °C

176. Which of the following is both unit less and dimensionless:

(a) Angle (b) Solid angle

(c) Mechanical equivalent of heat

(d) Refractive index

177. The maximum error in the measurement of mass and length of the side of a cube are 3% and 2% respectively. The maximum error in the measurement of its density will be:

(a) 3% (b) 5% (c) 6% (d) 9%

178. The area under the acceleration time graph represent:

(a) Displacement (b) Velocity

(c) Change in velocity (d) Distance travelled

179. Disillusioned with life in a communist country, he _____ to the west.

(a) emigrated (b) travelled

(c) defected (d) deserted

180. If $x + iy = (5 - 3i)^3$, then x = _____ and y = _____

(a) (10, 198) (b) (10, -198)

(c) (-10, +198) (d) (-10, -198)

181. $|Z| = |-Z|$ for a complex number Z, if and only if it hold that (i) Z = -Z

(ii) $Z = \bar{Z}$ (iii) $Z = -\bar{Z}$ (a) Only (i) holds

(b) (i) and (ii) both holds

(c) (i), (ii) and (iii) holds

(d) Either (i) or (ii) holds

182. If $A = \begin{bmatrix} 2 & \lambda \\ 3 & 1 \end{bmatrix}$ is a non singular matrix, then λ can takes all the real values except for

(a) 0 (b) $\frac{2}{3}$ (c) $-\frac{2}{3}$ (d) $\frac{3}{2}$

183. The largest number of molecules are present in the:

(a) 22g of CO_2 (b) 64g of O_2

(c) 14g of N_2 (d) 90g of H_2SO_4

184. A centripetal force F acts on a body moving with angular speedω. If the angular speed is tripled then the magnitude of centripetal force becomes;

(a) 8F (b) 9F (c) 3F (d) 4F

185. Colour fringes observed in soap bubbles are the example of

(a) Diffraction (b) Interference

(c) Reflection (d) Refraction

186. The product of pressure and volume has the same SI base units as

(a) Energy (b) Force

(c) Power (d) Heat capacity

187. Cannon had _____ unique qualities _____ it was used widely in ancient times.

(a) such, so (b) that, since

(c) that, that (d) such, that

188. If $\frac{\theta}{2}$ lies in the 3rd or 4th quadrant, then $\sin\frac{\theta}{2}$ =

(a) $\sqrt{\frac{1+\cos\theta}{2}}$ (b) $\sqrt{\frac{1-\cos\theta}{2}}$

(c) $-\sqrt{\frac{1-\cos\theta}{2}}$ (d) $\pm\sqrt{\frac{1-\cos\theta}{2}}$

189. If $\theta < \pi$, then the relation between $\frac{\theta}{2}$ and $\frac{\pi}{2}$ is given by

(a) $\frac{\theta}{2}=\frac{\pi}{2}$ (b) $\frac{\theta}{2}<\frac{\pi}{2}$

(c) $\frac{\theta}{2}>\frac{\pi}{2}$ (d) $\frac{\theta}{2}\leq\frac{\pi}{2}$

190. $\frac{\cos5\theta+\cos3\theta}{\sin5\theta-\sin3\theta}$

(a) $\sin2\theta$ (b) $\cos8\theta$

(c) $\cot\theta$ (d) $\tan\theta$

191. Consider the flowing reaction: $3Ag+HNO_3 \rightarrow 3AgNO_3+NO+H_2O$ select the true statement.

(a) Silver is reduced (b) NO_3^- is oxidized to NO

(c) Silver gains electrons

(d) Nitrogen accepts electron

192. A fly wheels rotates at a constant speed of 3000 rpm (rev/min). The angle described by the shaft in radian in one second is:

(a) 2π (b) 30 π (c) 100 π (d) 3000 π

193. A ring and a disc have same mass and same radius. If we denote the moment of inertia of disc by I_d and that of ring by I_r then:

(a) $I_r > I_d$ (b) $I_r < I_d$ (c) $I_r = I_d$

194. The perpetual motion of the earth as it turns on its axis creates the change of seasons.

(The underlined word means).

(a) ancient (b) rhythmic

(c) leisurely (d) constant

195. If $|\vec{a}+\vec{b}| = |\vec{b}-\vec{a}|$ for two non zero vectors $\vec{a}$ and $\vec{b}$ then it holds that

(a) $\vec{a}$ and $\vec{b}$ are perpendicular

(b) $\vec{a}$ and $\vec{b}$ are parallel

(c) $\vec{a}$ and $\vec{b}$ are coplanar

(d) $\vec{a}$ and $\vec{b}$ are non coplanar

196. Let [illegible] then f

(a) 1 (b) -1 (c) 2 (d) -2

197. $\frac{d}{dx}(\cos ec^{-1}x)$ = _____ when x < 0

(a) $\frac{1}{x\sqrt{x^2+1}}$ (b) $\frac{-1}{x\sqrt{x^2-1}}$ (c) $\frac{-1}{x\sqrt{1-x}}$ (d) $\frac{1}{x\sqrt{1+x^2}}$

198. Select the correct order in boiling point:

(a) Butonal<2-Butanol<2 Methyl-2-proponal

(b) Butanol<1-Butonol<2-Methyl-2-propanol

(c) 2-Methyl-2-propanol<1-Butanol<2-Butanol

(d) 2-Methyl-2Propanol<2-Butanoic<1-Butonol

199. The carbon-carbon triple bond length in acetylene is

(a) 1.09A^0 (b) 1.119A^0

(c) 1.39 A^0 (d) 1.19A^0

200. In Wurt "z" synthesis alkyl halide react with sodium the solvent used is:

(a) Water (b) Alcohol

(c) Pyridine (d) Ether

ANSWER KEY ENGINEERING 2017

1.	B	2.	A	3.	D	4.	A	5.	D
6.	B	7.	A	8.	C	9.	B	10.	B
11.	A	12.	D	13.	D	14.	C	15.	D
16.	A	17.	D	18.	C	19.	B	20.	A
21.	A	22.	A	23.	A	24.	C	25.	C
26.	C	27.	A	28.	D	29.	B	30.	A
31.	C	32.	C	33.	B	34.	B	35.	A
36.	A	37.	D	38.	D	39.	C	40.	C
41.	B	42.	B	43.	D	44.	C	45.	A
46.	C	47.	C	48.	D	49.	B	50.	A
51.	C	52.	D	53.	B	54.	C	55.	A
56.	C	57.	D	58.	C	59.	D	60.	A
61.	B	62.	A	63.	B	64.	C	65.	C
66.	C	67.	B	68.	D	69.	D	70.	B
71.	D	72.	B	73.	A	74.	C	75.	B
76.	B	77.	A	78.	B	79.	B	80.	C
81.	B	82.	C	83.	D	84.	A	85.	C
86.	D	87.	D	88.	C	89.	B	90.	A
91.	B	92.	C	93.	B	94.	C	95.	C
96.	C	97.	C	98.	C	99.	B	100.	B
101.	C	102.	A	103.	B	104.	C	105.	B
106.	A	107.	B	108.	C	109.	B	110.	B
111.	C	112.	B	113.	A	114.	B	115.	B
116.	B	117.	A	118.	D	119.	B	120.	C
121.	A	122.	A	123.	D	124.	A	125.	A
126.	A	127.	B	128.	A	129.	C	130.	D
131.	A	132.	D	133.	A	134.	A	135.	D
136.	A	137.	A	138.	A	139.	A	140.	D
141.	D	142.	A	143.	B	144.	C	145.	B
146.	C	147.	A	148.	A	149.	D	150.	A
151.	A	152.	B	153.	A	154.	B	155.	A
156.	C	157.	D	158.	C	159.	D	160.	A
161.	D	162.	B	163.	A	164.	B	165.	C
166.	D	167.	D	168.	C	169.	B	170.	A
171.	D	172.	C	173.	C	174.	A	175.	A
176.	D	177.	D	178.	D	179.	B	180.	D
181.	C	182.	B	183.	B	184.	D	185.	B
186.	A	187.	D	188.	C	189.	B	190.	C
191.	D	192.	C	193.	A	194.	D	195.	A
196.	A	197.	B	198.	D	199.	D	200.	D